

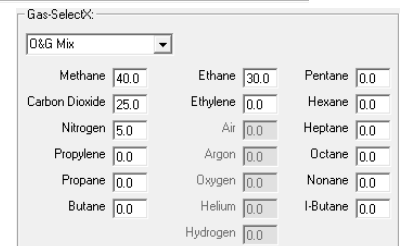
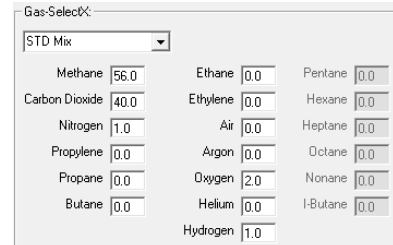
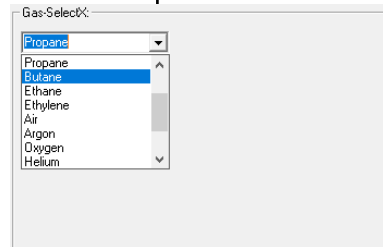
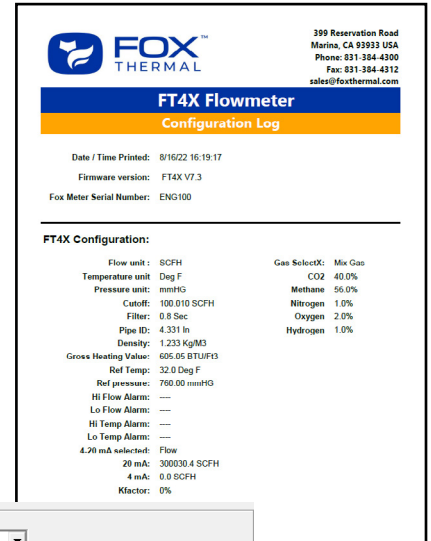
FEATURE

GAS-SELECT[®]X

In-Situ, Field-Selectable, Gas Selection Tool

HIGHLIGHTS

- Available on models FT1, FT4A, and FT4X
- Selection of common gasses such as air, natural gas, methane, carbon dioxide, and more.
- Selection of gas mixtures commonly found in flare and vent applications for Oil & Gas industries such as methane, ethane, propane, butane, and more.
- Quick access to gas settings through meter display.
- Easy to select gasses with pull down menus using the free FT View™ PC software tools.



GAS SELECTION TOOL

The Gas-SelectX® feature is a tool available on models FT1, FT4A, and FT4X flow meters that allows the user to select pure gasses - or create custom gas mixes - from a list of gasses available in menus easily accessed from the transmitter display or FT View™ software.

The Gas-SelectX® firmware continually runs in the meter. When the user changes the selected gas/gas mixture, the firmware automatically applies proprietary algorithms to ensure flow measurement accuracy is maintained. The Gas-SelectX® feature makes the FT1, FT4A, and FT4X the only thermal mass flow meters that can be reconfigured in the field and still maintain their factory-specified accuracy. This is a great alternative to removing the instrument for a factory recalibration or estimating a correction factor.

USER INTERFACE OPTIONS

The Gas-SelectX® tool can be easily accessed and configured from the meter's display buttons directly, via Modbus, or by using free software tools available for use on a laptop or PC (connected via a USB port on the meter).

The intuitive and easy-to-use FT View™ software gives process engineers and maintenance personnel a real-time view of process conditions. The Gas-SelectX® tool can be found in the configuration part of the FT View™ user interface. The tool allows the user to view the current gas information or choose from gas options in the gas selection menus (see images to the left).

BENEFITS OF IN-FIELD GAS CHANGES

Most commonly, flow meters are calibrated in the factory to measure a specific gas or mix of gasses. A change in gas composition on-site triggers a need for a factory recalibration. Shutting down the process to remove a flow meter and return to the factory for recalibration is a time consuming and expensive task that most users will try to avoid. Gas-SelectX® allows users to avoid a shutdown and returning the flow meter for recalibration.

The benefits of Gas-SelectX®:

- No costly process shut-downs when gas composition changes
- Fast, convenient gas composition programming on-site while gas flows
- Program gas or gas mix from the flow meter's front configuration panel or through free FT View™ software connected by USB port
- Extensive list of common pure gasses, biogas, oil & gas, and industrial gasses
- Create gas mixes with 2- to 5-gas (FT1) or 2- to 12-gas mixes (FT4A/FT4X)
- Maintain highest accuracy with precise programming in 0.1% increments
- Validate NIST calibration with CAL-V™ Calibration Validation

Case Study - Natural Gas Composition

There is a misconception that "natural gas" has a set or standard set of gas constituents. In fact, natural gas is a broad term used to describe a number of gasses that may occur in varying percentages. Most flow measurement device calibrations for natural gas may be set to the NAESB standard or are based on a gas sample analysis from the measurement point. Furthermore, natural gas composition may change over time, especially in circumstances of direct extraction near drilling locations.

An Italian transporter injecting odorant into the natural gas stream for safety purposes found that odorant material costs were skyrocketing. An odorization system may consume \$40,000 USD of odorant per year. The system relies on accurate flow measurement to determine the amount of odorant to be injected to maintain the optimal gas/odorant ratio.

After careful investigation, it was found that flow measurement error due to inaccurate gas calibrations caused percentage errors from +4.0 to +10.0. The transporter had supplied a single gas composition analysis from one measurement point as the composition for all measurement points because they assumed that the composition would be uniform across the entire system.

After installing Fox Thermal's FT4X with the Gas-SelectX® tool, the customer was able to establish a routine gas sampling and flow meter gas composition programming schedule to maintain the highest flow measurement accuracy across all measurement points.

The client was satisfied that odorant material costs were brought down to manageable margins. Moreover, safety standards were met within regulated guidelines by achieving the specified gas/odorant ratio.

ADVANCED TECHNOLOGY

PURE GAS MENU

Models FT1, FT4A, and FT4X have a choice of pure gasses that can be quickly selected from a list in the Pure Gas Menu. This sets the flow meter to measure the chosen gas as pure - or 100% of the gas composition flowing in the pipe.

GAS MIX AND OIL & GAS MENUS

When there is a mixture of gasses present in the pipe, a gas sample can determine the composition of gasses in the mix and the flow meter can be set to measure the gas mixture by choosing gasses from one of the gas mix menus. The FT1 offers up to 5 gasses to be mixed while the FT4A and FT4X allow any number of gasses to be mixed from the available list of gasses in the Standard Mix Gas Menu. Additional gas mixes are available for models FT4A & FT4X in the Oil & Gas Menu (O&G Menu). Gas mixes can be set in 0.1% increments to create a custom gas mix.

DDC-SENSOR™

The Fox Thermal DDC-Sensor™ is the state-of-the-art sensor technology used in Fox Thermal models FT1, FT4A, and FT4X thermal gas mass flow meters. The DDC-Sensor™, a Direct Digitally Controlled sensor, is unlike other thermal flow sensors available on the market. Instead of using traditional analog circuitry, the DDC-Sensor™ is interfaced directly to the microprocessor for more speed and programmability. The DDC-Sensor™ accurately responds to changes in process variables (gas flow rate, pressure, and temperature) to determine mass flow rate, totalized flow, and temperature.

Fox Thermal's DDC-Sensor™ provides a technology platform for calculating accurate gas correlations. The correlation algorithms allow the meter to be calibrated on a single gas in the factory while providing the user the ability to select other gasses or gas mixes in the Gas-SelectX® menu. Fox Thermal's DDC-Sensor™ and advanced correlation algorithm provide accurate, multi-gas-capable thermal gas flow meters.

FT VIEW™ SOFTWARE

Fox Thermal has developed advanced software - FT View™ - free PC-compatible applications available for download from the Fox Thermal website. Connect your laptop, PC, or control station to the meter using the USB port interface to access the meter's data and configure the meter's settings.

FT View™ allows:

- Quick access to all configuration parameters and available gas selections
- Selection of measurement units, flow and temperature ranges, alarm settings and more
- View or print a CAL-V™ Calibration Validation certificate
- Display of alarm codes
- Storage of meter configurations to a file that can be archived
- Raw data to be viewed in order to diagnose or troubleshoot your meter
- Data logging to an Excel™ spreadsheet
- View gross heating value and density of gas mix

Pure Gas Menu - Single (100%)	Standard Mix Gas Menu	Oil & Gas (O&G) Menu
FT1/FT4A/FT4X - Choose any 1 Gas	FT1 - Choose up to 5 Gasses FT4A/FT4X - Choose Any Combination	FT1 - Unavailable FT4A/FT4X - Choose Any Combination
	Mixtures must equal 100%	Mixtures must equal 100%
Air	Air	Methane
Argon	Argon	Ethane
Butane	Butane	Propane
Carbon Dioxide	Carbon Dioxide	Iso Butane
Ethane	Ethane	Normal Butane
Ethylene	Ethylene	Pentanes
Helium	Helium	Hexanes
Hydrogen	Hydrogen	Heptanes
Methane	Methane	Octanes
Natural Gas*	Nitrogen	Nonanes+
Nitrogen	Oxygen	Carbon Dioxide
Oxygen	Propane	Nitrogen
Propane	Propylene	Ethylene
Propylene		Propylene

* Choosing "natural gas" sets the NAESB average in a pre-programmed mix of methane, ethane, propane, nitrogen, and carbon dioxide. "Natural gas" is not available for gas mixes. For optimal accuracy, program a custom natural gas composition using the mixed gas or O&G menus after performing a gas sample analysis at the measurement point.



Make downtime a thing of the past.

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